

Management recommendations and performances for more effective conservation of the Spanish imperial eagle's (*Aquila Adalberti* BREHM, 1861) habitat and populations.

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Abstract: The Spanish imperial eagle (*Aquila Adalberti* BREHM, 1861) is nowadays the predatory bird most threatened in the Iberian Peninsula, as well as one of the most threatened in the world. It is listed in several International agreements of protection (IUCN, Bern, Cites, Bonn) as well as in the annexe I of Birds Directive (79/409/CEE) which makes up the Natura 2000 network. Regarding the Spanish framework, some measures have been taking to protect the Spanish imperial eagle. It is included in the National Catalogue of Threatened Species as "In danger of Extinction" (Real Decreto 439/1990) and also in annexe IV of the new Law 42/2007 of Natural Heritage and Biodiversity. Nowadays there are only 216 pairs and it is limited to the western South quadrant of the Iberian Peninsula.

The present communication will try to show a set of performances and measures of management, which have been carried out in Spain, for improvement and conservation of habitat and populations of Spanish imperial eagle. We want to show also different contributions and information from different specialists and work groups with recognized prestige and experience, which follow the recommendations proposed in the National Strategy for the Conservation of the Spanish imperial eagle. Also particular management experiences carried out in private and public properties, which are included in Natura 2000 network. In these experiences we will comment among other proposals, the compatible forest practices with the conservation of the Spanish imperial eagle's habitat and the improvement of the habitat and the populations of rabbit (*Oryctolagus cuniculus*), main Eagle's prey.

Keywords: *Aquila Adalberti*. Forest management. Habitat conservation. Habitat restoration. Natura 2000. *Oryctolagus cuniculus*.

Introduction

The Spanish imperial eagle (*Aquila Adalberti* BREHM, 1861) is nowadays the predatory bird most threatened in the Iberian Peninsula, as well as one of the most threatened in the world. It is listed in several International agreements of protection (IUCN, Bern, Cites, Bonn) as well as in the annexe I of Birds Directive (79/409/CEE) (European Commission, 1979) which makes up the Natura 2000 network (European Commission, 1992). Regarding the Spanish framework, some measures have been taking to protect the Spanish imperial eagle. It is included in the National Catalogue of Threatened Species as "In danger of Extinction" (Real Decreto 439/1990) and also in annexe IV of the new Law 42/2007 of Natural Heritage and biodiversity (Ministerio de Medio Ambiente, 2007). Nowadays there are only 216 pairs and it is limited to the western South quadrant of the Iberian Peninsula.

The Strategy for the Conservation of the Spanish imperial eagle was approved on 9th July 2001 (Comisión Nacional de protección para la Naturaleza, 2001). This Strategy includes the guidelines and criteria for the specie recuperation, as well as the minimum contents for Regional Recuperation Plans. In October 2003 "The Recuperation plan for the Spanish imperial eagle and the Measures for its Protection" in Castilla y León was approved (Decreto 114/2003). At this moment, Castilla y León Regional Environment Ministry made an agreement with the Technical University of

Madrid to draw up planning and management criteria for Natura 2000 Network biodiversity conservation. Whithin the objectives of this agreement it is the elaboration of a report titled “Management criteria for the most important habitat of the Spanish imperial eagle in Castilla y León”. The research work presented here, started at this moment. It aimed to propose (after the revision and study of all the activities made till now related with the conservation of the Spanish imperial eagle) a set of active measures and a set of good practices related to the exploitation activities of the property, both focus on the conservation of the specie.



A B C
Figure 1. A. Spanish imperial eagle with chick (José L. Glez Grande /Antonio Vázquez); B. Spanish imperial eagle flying (Fernando López); C. Spanish imperial eagle's distribution (BirdLife International)

Materials and methods

For the proposals we have take into account the following points:

- 1) The restrictions and recommendations of the legislation at the European and national level and specially at the regional level (Recuperation Plan for the Spanish imperial eagle in Castilla y León and Instruction 02/DGMN/2005 about management forestry criteria compatibles with the conservation of birds and quiropters in Castilla y León).
- 2) Existing bibliography, particularly “Manual of good practices of management in Mediterranean properties included un Natura 200 Network (González y San Miguel, 2004)”, the thesis “Models of integrated management for multiple-use Mediterranean territories (Otero, 2004) and the survey “Good silviculture and pastoral management practices for the Spanish imperial eagle (*Aquila adalberti*) promotion” (Acuña, 2005).
- 3) Particular experiences carried out, as the conservation of the Spanish imperial eagle in Valsáin (Segovia), or the work carried out since 1998 by CBD-Hábitat Foundation for de conservation and foster of the specie in collaboration with the properties (LIFE Projects 99/NAT/E/006336 and 03/NAT/E/00050), as well as the work for other threatened species, as de Iberian lynx (*Lynx pardina*) who shares the habitat and the rabbit as principal prey, and whose actuaciones for its conservation benefices also Spanish imperial eagle (LIFE Project 02/NAT/E/8609).

Results and discussion

The result of this analysis lead to the publication “Biology, Habitat and Forestry Management of Spanish imperial eagle (García Abril, Acuña & Grande Vega, 2008)”, which includes all the information mentioned above and the proposals for the activities for the conservation of the specie. These proposals were also taken into account for the redaction of Forest Management Projects of three woodlands in Castilla y León. These woodlands are included in Natura 2000 Network and host Spanish imperial eagle. They are all in a designated Sensible Area for the specie. The proposals for the performances and improvements were divided in the following parts:

Table 1. Proposals for active measurements

Inside Critic Areas and Sensible Areas			
1. Nesting	It nest	Nesting trees	9 specific proposals
		Area closed to Nesting trees	4 specific proposals
		Perch trees	3 specific proposals
	It don't nest		2 specific proposals
2. Threats	Mortality causes	Poison	4 specific proposals
		Collision and electrocution	4 specific proposals
		Human persecution: guns and pillaging	2 specific proposals
	Nuisances and lack of tranquility		10 specific proposals
3. Food availability	Rabbit		8 specific proposals
	Paloma torcaz		3 specific proposals
	Supplementary food		1 specific proposal
Outside Critic or Sensible Areas			
1. Where eagle lived once and then disappeared	Identify possible causes of disappearance.	Habitat degradation	7 specific proposals
		Threatens	Idem A.1.3.
		Food availability	Idem A.1.2.
2. Where eagle never lived but near a territory where it lives	Improvements	Habitat degradation	7 specific proposals
		Threatens	Idem A.1.3.
		Food availability	Idem A.1.2.

Table 2. Proposals of good practices: performances linked to the typical activities of the property

1. Infrastructures		4 specific proposals
2. Land		6 specific proposals
3. Livestock farming	Livestock	5 specific proposals
	Herbaceous vegetation	5 specific proposals
4. Forestry exploitation	Shrub vegetation	4 specific proposals
	Tree vegetation	11 specific proposals
5. Game	Big game	3 specific proposals
	Small game	10 specific proposals
	Both	2 specific proposals

Conclusions

Spanish imperial eagle's habitat is mostly located in private properties or managed privately. Therefore, it is affected by the particular exploitations and economic interests, mainly referred to hunting, agricultural and forestry activities. However, the current knowledge of the Spanish imperial eagle's biology and the good results in the projects carried out till now in the private properties show us that is possible and factible to make the traditional uses and exploitations compatible with the management and conservation of the threaten species.

On the other hand we have seen that the improvement and conservation of the Spanish imperial eagle's habitat means also the improvement and conservation of the ecosystem in general and the improvement and conservation of the habitat of many other species since the Spanish imperial eagle is an umbrella specie. Therefore, applying our proposals will not only benefice *Aquila adalberti* but the ecosystem too.

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